WHAT IS CLAIMED IS:

1. Sorption agent for removing a heavy metal from a gas containing a heavy metal, comprising

at least one solid comprising a carrier material onto which at least one polysulfide is fixed.

2. Sorption agent according to Claim 1,

wherein the at least one polysulfide is selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, calcium, magnesium, barium, ammonium and organic amine polysulfides.

3. Sorption agent according to Claim 1,

wherein the amount of polysulfide is selected from the group consisting of 0.5 to 50 wt.-%, and 1 to 20 wt.-% of at least one polysulfide, with reference to the total weight of the carrier material and the polysulfide, and said polysulfide being fixed onto the carrier material.

4. Sorption agent according claim 1,

wherein the carrier material is porous.

5. Sorption agent according to Claim 4,

wherein the carrier material has a BET surface selected from the group consisting of 100 to 2,000 m^2/g and, from 500 to 800 m^2/g.

6. Sorption agent according to claim 1,

wherein the carrier material is selected from the group consisting of pumice, clay, activated carbon, and a mixture of at least two of these materials.

7. Sorption agent according to claim 1,

wherein the carrier material has a grain size selected from the group consisting of between 1 μm and 10 mm, between 10 μm and 40 μm, and between 2 mm and 5 mm.

8. Sorption agent according to claim 1,

wherein the sorption agent contains not only a first solid made of a carrier material, but also at least one other second solid.

9. Sorption agent according to Claim 8,

wherein the at least one other second solid is selected from the group consisting of a carrier material onto which no polysulfide is fixed, an inert material, and a mixture thereof.

10. Method for removing a heavy metal from a gas containing a heavy metal comprising

bringing the gas containing the heavy metal into contact with a sorption agent; and

using a sorption agent that contains at least one solid comprising a carrier material onto which at least one polysulfide is fixed.

11. Method according to Claim 10, comprising

conducting it in a manner selected from the group consisting of a fixed bed process and a gas stream process.

12. Method according to Claim 10,

wherein the at least one polysulfide is selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, calcium, magnesium, barium, ammonium and organic amine polysulfides.

13. Method according to claim 10,

wherein the amount of polysulfide is selected from the group consisting of 0.5 to 50 wt.-%, and 1 to 20 wt.-% of at least one polysulfide, with reference to the total weight of the carrier material and the polysulfide, and is fixed onto the carrier material.

14. Method according to claim 10,

wherein the carrier material is porous.

15. Method according to Claim 12,

wherein the carrier material has a BET surface of 100 to 2,000 m^2/g.

16. Method according to claim 10,

wherein the carrier material is selected from the group consisting of pumice, clay, activated carbon, and a mixture of at least two of these materials.

17. Sorption agent according to claim 7,

wherein the grain size of the carrier material is between 1 μm and 10 mm.

18. Sorption agent according to Claim 17,

wherein the grain size of the carrier material is selected from the group consisting of between 1 μm and 200 μm, between 10 μm and 40 μm, and between 2 mm and 5 mm.

19. Method according to claim 10,

wherein the method contains not only a first solid, but also at least one other second solid.

20. Method according to Claim 19,

wherein the at least one other second solid is selected from the group consisting of a carrier material onto which no polysulfide is fixed, an inert material, and a mixture thereof.